CLAIMS

What is Claimed is:

1. An optical position-tracking system comprising:

a first light beam steering device for sweeping a first light beam through a first angular range to cause a reflection of said first light beam by a target; and

a second light beam steering device for sweeping a second light beam through a second angular range to cause a reflection of said second light beam by said target, wherein a position of said target is determined using a triangulation technique utilizing a first angular value of said first light beam and a second angular value of said second light beam, and wherein said first angular value and said second angular value depend on the existence of said respective reflection.

2. The optical position tracking system as recited in Claim 1 further comprising a processing unit for determining said position of said target.

3. The optical position-tracking system as recited in Claim 1 wherein said position of said target is an absolute position.

4. The optical position-tracking system as recited in Claim 1 wherein said target includes a retro-reflecting surface.

5. The optical position-tracking system as recited in Claim 1 wherein if said target reflects said first light beam when said first light beam is at a particular angular value, said first light beam steering device sweeps said first light beam through a limited angular range that includes said particular angular value until said target fails to reflect said first light beam.

6. The optical position-tracking system as recited in Claim 1 wherein if said target reflects said second light beam when said second light beam is at a particular angular value, said second light beam steering device sweeps said second light beam through a limited angular range that includes said particular angular value until said target fails to reflect said second light beam.

7. The optical position-tracking system as recited in Claim 1 wherein said first light beam steering device and said second light beam steering device are each selected from a group consisting of a MEMS (microelectromechanical system) motor beam steering device, a galvanometer beam steering device, an acousto-optic beam steering device, an electro-optic beam steering device, a grating structure beam steering device, a holographic structure beam steering device, and a scanning mirror beam steering device.

8. The optical position-tracking system as recited in Claim 1 wherein said first light beam and said second light beam are each generated by a light source selected from a group consisting of an incandescent technology-based light source, a LED (light emitting diode) technology-based light source, a semiconductor laser technology-based light source, and a rare-earth laser technology-based light source.

9. A system comprising:

a first light beam steering device for sweeping a first light beam through a first angular range to cause a reflection of said first light beam by a target;

a second light beam steering device for sweeping a second light beam through a second angular range to cause a reflection of said second light beam by said target, wherein a position of said target is determined using a triangulation technique utilizing a first angular value of

said first light beam and a second angular value of said second light beam, and wherein said first angular value and said second angular value depend on the existence of said respective reflection; and

a computer system for receiving and using said position of said target.

10. The system as recited in Claim 9 further comprising a processing unit for determining said position of said target.

11. The system as recited in Claim 9 wherein said position of said target is an absolute position.

12. The system as recited in Claim 9 wherein said position enables controlling a cursor in said computer system.

13. The system as recited in Claim 9 wherein said position enables inputting data into said computer system.

14. The system as recited in Claim 9 wherein said target includes a retro-reflecting surface.

15. The system as recited in Claim 9 wherein if said target reflects said first light beam when said first light beam is at a particular angular value, said first light beam steering device sweeps said first light beam through a limited angular range that includes said particular angular value until said target fails to reflect said first light beam.

16. The system as recited in Claim 9 wherein if said target reflects said second light beam when said second light beam is at a particular angular value, said second light beam steering device sweeps said second

light beam through a limited angular range that includes said particular angular value until said target fails to reflect said second light beam.

17. The system as recited in Claim 9 wherein said first light beam steering device and said second light beam steering device are each selected from a group consisting of a MEMS (microelectromechanical system) motor beam steering device, a galvanometer beam steering device, an acousto-optic beam steering device, an electro-optic beam steering device, a grating structure beam steering device, a holographic structure beam steering device, and a scanning mirror beam steering device.

18. The system as recited in Claim 9 wherein said first light beam and said second light beam are each generated by a light source selected from a group consisting of an incandescent technology-based light source, a LED (light emitting diode) technology-based light source, a semiconductor laser technology-based light source, and a rare-earth laser technology-based light source.

19. A method of optically tracking a target, said method comprising:

sweeping a first light beam through a first angular range at a first location and determining a first angular value of said first light beam;

sweeping a second light beam through a second angular range at a second location and determining a second angular value of said second light beam; and

when said target causes a reflection of said first and second light beams, determining a position of said target using a triangulation technique utilizing said first and second angular values which depend on the existence of said respective reflection.

20. The method as recited in Claim 19 wherein said position of said target is an absolute position.

21. The method as recited in Claim 19 wherein said target includes a retro-reflecting surface.

22. The method as recited in Claim 19 wherein said sweeping said first light beam step includes:

if said target reflects said first light beam when said first light beam is at a particular angular value, sweeping said first light beam through a limited angular range that includes said particular angular value until said target fails to reflect said first light beam.

23. The method as recited in Claim 19 wherein said sweeping said second light beam step includes:

if said target reflects said second light beam when said second light beam is at a particular angular value, sweeping said second light beam through a limited angular range that includes said particular angular value until said target fails to reflect said second light beam.

24. The method as recited in Claim 19 wherein said sweeping said first light beam step is performed by a first light beam steering device, wherein said sweeping said second light beam step is performed by a second light beam steering device, and wherein said first light beam steering device and said second light beam steering device are each selected from a group consisting of a MEMS (microelectromechanical system) motor beam steering device, a galvanometer beam steering device, an acousto-optic beam steering device, an electro-optic beam steering device, a grating structure beam steering device, a holographic structure beam steering device, and a scanning mirror beam steering device.

25. The method as recited in Claim 19 wherein said first light beam and said second light beam are each generated by a light source selected

from a group consisting of an incandescent technology-based light source, a LED (light emitting diode) technology-based light source, a semiconductor laser technology-based light source, and a rare-earth laser technology-based light source.

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